

REMARKS

The rejections of Claims 43-46, 49, 52-59 and 61 as being unpatentable over Ong et al., in view of Neerinck et al., Hashimoto et al., and Ichimura et al., and of Claims 47-48 and 50 as being unpatentable over Ong et al., in view of Neerinck et al., Hashimoto et al., and Ichimura et al., and further in view of Rzad et al., both under 35 U.S.C. § 103(a), are traversed. Reconsideration is respectfully requested.

Applicants believe that the Office Action has reached a number of conclusions based either upon an incomplete record or some incorrect assumptions. For example, the Office Action states that the Ong et al., patent teaches a process in which the chamber is pumped down to a pressure of 10^{-4} mbar (col. 6, lines 15-35). The referenced section provides no such support for that statement, instead referring to the characteristics of the ECR plasmas. The pressure conditions within the chamber appear to be described at col. 6, lines 36-42, where a pressure range of 1-200 mTorr is mentioned. In other words, Applicants' inventive process is carried out at much lower vacuum, i.e., much higher vacuum quality, which strongly influences the protective characteristics of the produced layer system. This was not something taught or even implied in any of the cited prior art.

Recognizing that Ong et al., “does not include cleaning the substrate before depositing the adhesive layer,” the Office Action relies on the Neerinck et al., patent for that feature. But the Neerinck et al., patent appears to teach nothing about cleaning, only etching (col. 5, lines 30-35). The purpose of such etching is to activate the surface and remove residual oxides. One skilled in the art knows that such bombardment activation is different from a substrate cleaning operation where volatiles are removed from the surface, for example, by igniting a noble gas plasma. Hence, it is not correct to say that Neerinck et al., would have made it obvious to include a cleaning step before deposition.

Another misstatement in the Office Action is that the Hashimoto et al., patent teaches applying a sinusoidal substrate bias voltage on the medium frequency range of 1kHz to 10,000 kHz, referring to col. 13, lines 8-48. Taking into account that the rejections on issue are obviousness, not anticipation-based rejections, Applicants further note that the Hashimoto et al., patent teaches nothing about such a range for “vapor depositing of the adhesive later [sic, layer].” The referenced section refers only to etching 100 kHz or 66.7 kHz. That is, there is no relevant teaching of the claimed feature.

Contrary to what the Office Action states the Ong et al., patent does not teach the application of a transition layer to the adhesion layer, etc., as set forth in (d) of Claim 43. The referenced section (col. 2, line 20 to col. 3, line 8) is a

generalized summary of the claimed method. All that it really says is that the interlayer (16 in Fig. 1) acts as a transition layer, that interlayer being formed by reacting a bottom portion of the amorphous silicon film at 800°C. It is clear that there is no teaching of simultaneous depositing of the adhesion layer and carbon from the gas phase given that the Ong et al., transition layer is formed in two steps at different temperatures as can best be seen from the equations summarizing the Fig. 4 deposition method at col. 7, line 19 *et seq.*

The above examples are illustrative, but not necessarily exhaustive, for purposes of demonstrating that the Office Action does not set forth a *prima facie* case of obviousness. The conclusion found in the last paragraph on page 6 of the Office Action regarding the creation of a magnetic field and its purpose as well as a similar conclusion found on page 7 as to the reason for heating the substrate to have good substrate anisotropy and increase process efficiency appear to be conclusions derived from the Applicants' disclosure and not to any suggestions in the secondary references for doing those things. One need only look at the Examiner's statements regarding the Ichimura et al., patent to see the use of impermissible hindsight in both rejections. Applicants see no reference to a longitudinal and variable magnetic field in that patent. Ichimura et al., uses permanent magnets which suggests to Applicants that the magnetic field in that prior art apparatus is not continuously or step-wise variable.

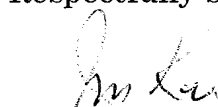
Accordingly, early and favorable action is now earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #080313.48830D1).

Respectfully submitted,

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